FLIGHT SUMMARY REPORT

Flight Number: 97-100

Calendar/Julian Date: 14 May 1997 • 134

Sensor Package: Hycon HR-732
Wild-Heerbrugg RC-10
Thematic Mapper Simulator (TMS)

Area(s) Covered: Mojave Desert

Investigator(s): Stine, USGS **Aircraft #:** 706

SENSOR DATA

Accession #:	05182	05183	-----
Sensor ID #:	020	076	074
Sensor Type:	HR-732	RC-10	TMS
Focal Length:	24” 609 mm	12” 304.89 mm	-----
Film Type:	Aerochrome MS 2448 II	Panatomic X Aerographic II EK 2412	-----
Filtration:	HF3	Wratten 12	-----
Spectral Band:	420-700 nm	510-700 nm	-----
f Stop:	16	11	-----
Shutter Speed:	1/250	1/200	-----
# of Frames:	325	174	-----
% Overlap:	60	60	-----
Quality:	Excellent	Excellent	-----
Remarks:	Add 1 second for correct GMT	No time offset to nav data	

Airborne Science and Applications Program

The Airborne Science and Applications Program (ASAP) is supported by three ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated by the High Altitude Missions Branch at NASA-Ames Research Center, Moffett Field, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and *in situ* data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

Daedalus Channel	TM Band	Wavelength, *mm*
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43^{o}
Swath Width:	8.4 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10 metric mapping camera
  - 9 x 9 inch film format
  - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
  - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet

- Hycon HR-732 large scale mapping camera
  - 9 x 18 inch film format
  - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet

- IRIS II Panoramic camera
  - 4.5 x 34.7 inch film format
  - 24 inch focal length lens
  - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

Information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 650-604-6252).

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-100

Accession # 05182
Sensor # 020

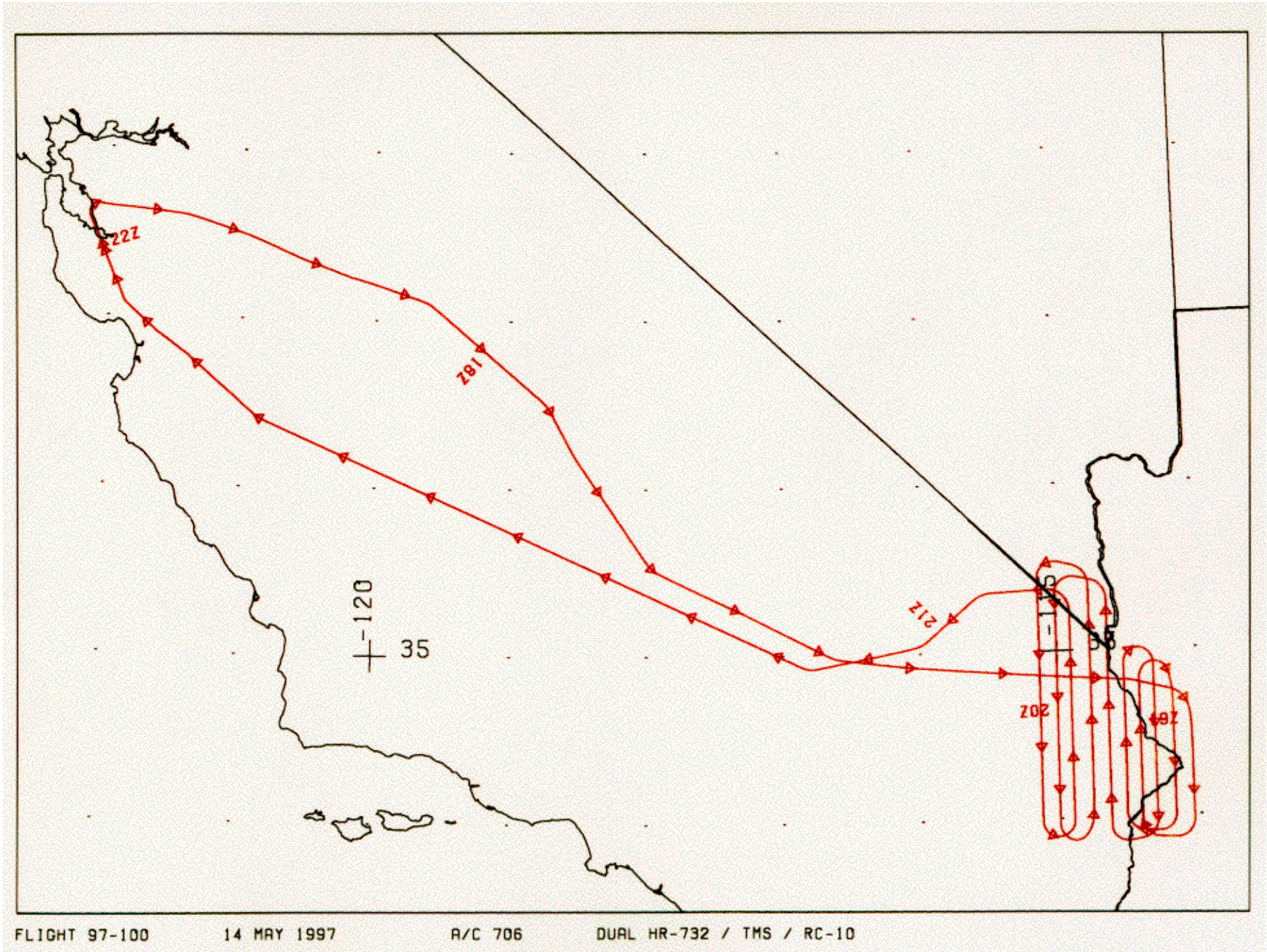
Check Points	Frame Numbers	Time (GMT-hr, min, sec) START	Time (GMT-hr, min, sec) END	Altitude, MSL feet/meters	Cloud Cover/Remarks
A - B	0001-0018	18:46:45	18:50:51	65106/19844	Haze throughout; processing residue (frame 0017)
C - D	0019-0046	18:55:44	19:02:15	64789/19748	Haze throughout
E - F	0047-0068	19:07:05	19:12:08	65168/19863	Haze throughout; processing residue (frame 0049)
G - H	0069-0100	19:16:22	19:23:50	64975/19804	Haze throughout
J - K	0101-0125	19:28:23	19:34:09	65324/19911	Haze throughout; processing residue (frames 0111 and 0114)
L - M	0126-0161	19:39:18	19:47:44	65625/20002	Haze throughout
O - P	0162-0209	19:54:36	20:05:55	64900/19782	Minor-10% cumulus (frames 0162-0163); haze throughout; processing residue (frame 0184)
Q - R	0210-0249	20:09:52	20:19:15	64828/19760	Haze throughout
T - U	0250-0300	20:26:01	20:38:03	65380/19928	Haze throughout; minor-10% cumulus (frames 0250-0251); intermittent mismetering beginning with frame 0283
V - W	0301-0325	20:41:38	20:47:25	64112/19541	Haze throughout; all frames mismetered

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-100

Accession # 05183

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	7146-7154	18:46:44	18:50:31	65111/19846	Clear
C - D	7155-7168	18:55:43	19:01:55	64764/19740	Clear
E - F	7169-7180	19:07:04	19:12:19	65167/19863	Clear
G - H	7181-7196	19:16:22	19:23:31	64962/19800	Clear
J - K	7197-7209	19:28:21	19:34:05	65315/19908	Clear
L - M	7210-7227	19:39:18	19:47:25	65628/20003	Clear
O - P	7228-7251	19:54:36	20:05:35	64900/19782	Minor-10% cumulus (frames 7228-7229)
Q - R	7252-7271	20:09:52	20:18:57	64785/19746	Clear
T - U	7272-7297	20:26:01	20:37:57	65385/19929	Minor-10% cumulus (frames 7272-7273)
V - W	7298-7319	20:41:38	20:51:40	64264/19588	10% cumulus (frame 7319)



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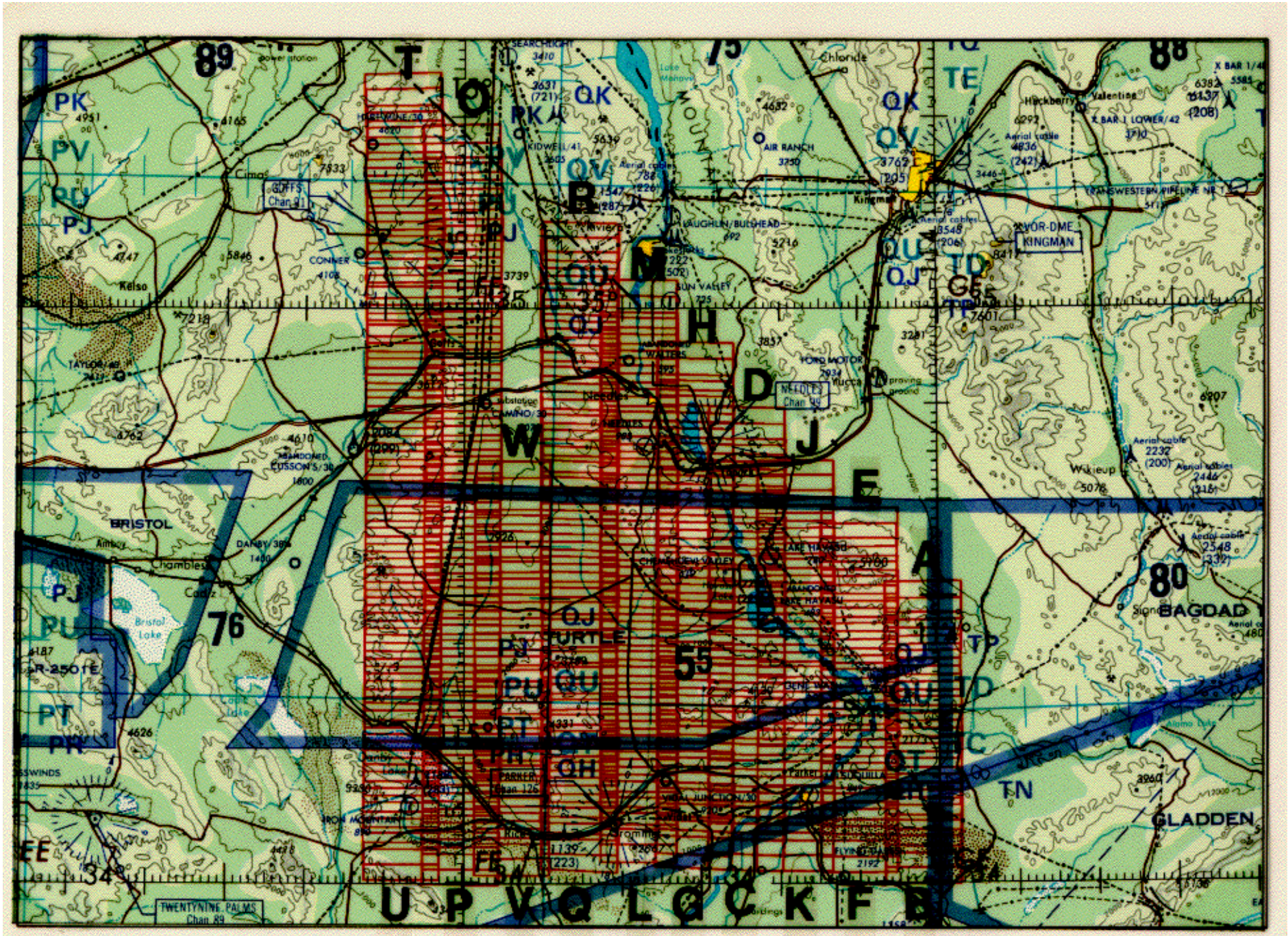
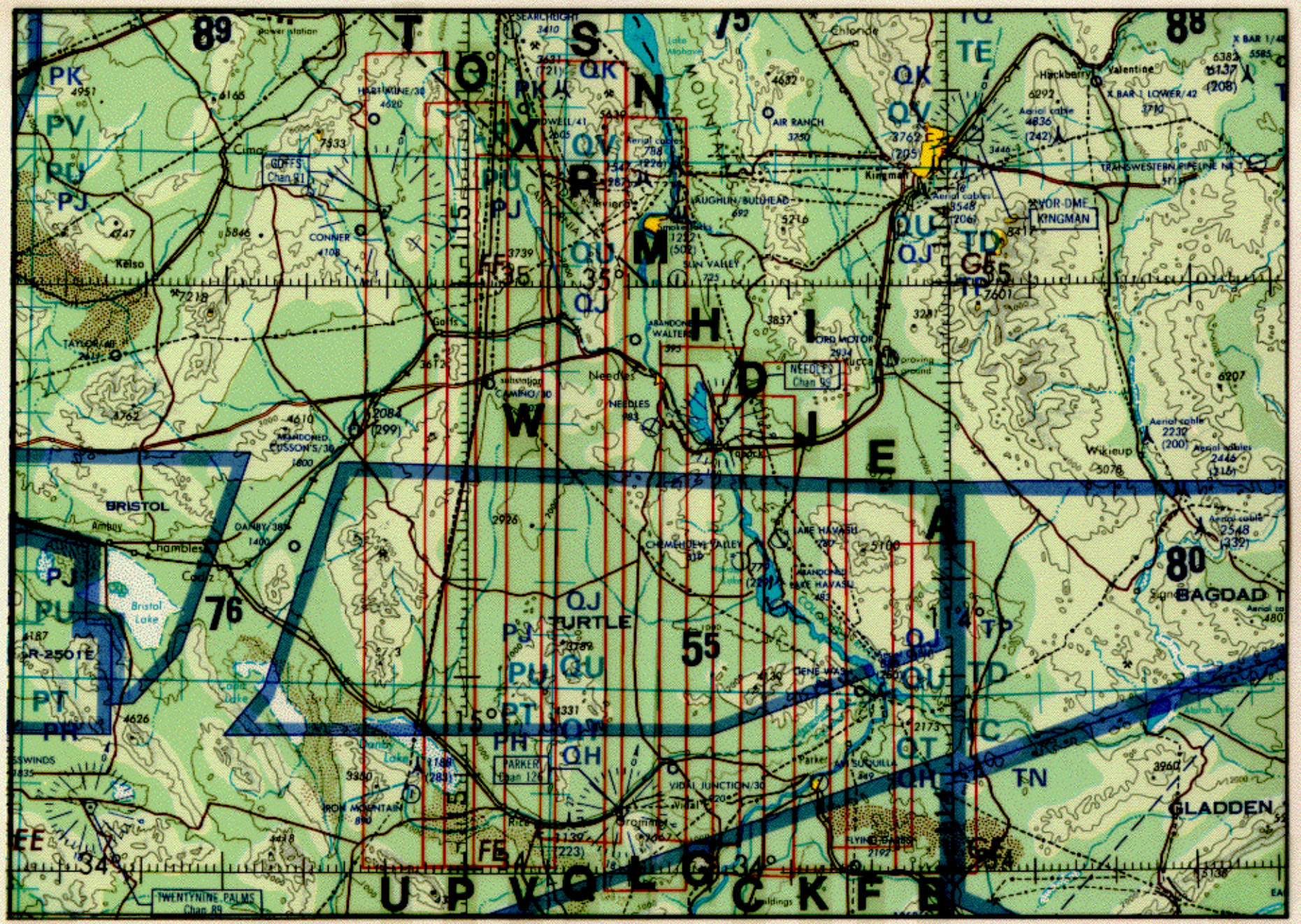


FLIGHT 97-100 14 MAY 1997 A/C 706 HR-732 ONC G-18



FLIGHT 97-100 14 MAY 1997 A/C 706 TMS / RC-10 ONC G-18